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ABSTRACT

The purpose of this study is to demonstrate an experimental procedure which lends itself to the controlled study of adult moral behavior. The procedure is a variation of Prisoner's Dilemma, a game widely used for the study of conflict resolution. The conflict generated by the game is both interpersonal and intrapersonal. The key issue in the dilemma is the agreement between partners to regulate self-centered behavior in the interest of the common good. The sample was drawn from women enrolled in undergraduate, graduate and continuing education classes at the University of Toledo. In the laboratory simulation of a moral dilemma in which two women agreed to cooperate and one partner subsequently ignored that agreement, principled women were found to maintain the contract and cooperate regardless of their losses, whereas conventional women broke the contract and minimized their losses. This and other results are discussed in relation to such factors as anxiety, level of moral reasoning, situational characteristics and sense of commitment. (SJL)

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Women's Moral Reasoning and Behavior in A Contractual Form of Prisoners' Dilemma

M. Kathryne Jacobs, Ph.D.

The importance of exploring the relationship between moral reasoning and behavior has been pointed out by cognitive developmental theorists, including Kohlberg (1969), Haan (1975), Turiel and Rothman (1972) and Rest (1974). The issue concerns the interregulation of cognition and action. The assumption is not simply that the stage used in hypothetical reasoning is the same as the stages used in practical situations but that they bear some relationship to one another. However, the situational variables which effects the relationship between hypothetical reasoning, practical reasoning and actual behavior are not known. Research linking moral judgment and behavior in adults has largely been the post hoc examination of subjects' moral reasoning after some public demonstration of their decision making. For example, Kohlberg (1972, 1974) analyzed transcripts from the Nuremberg and May Lai trials, and the Watergate tapes, and discussed a correspondence between the stage of reasoning people used to justify their actions and the relative social justice of those actions. Haan (1975), studying students at Berkeley during the Free Speech Movement, examined the relationship of their moral reasoning about hypothetical dilemmas to their moral reasoning about the actual situation of Civil Disobedience.

It is apparent that data on the relationship between moral reasoning and actual behavior will not accumulate quickly if we must wait for public moral dilemmas and hope for access to the reasoning of the participants. Nor will the variables effecting the reasoning-behavior relationship be clarified unless they can be controlled to some extent. Turiel and Rothman (1972) have employed an experimental paradigm wherein children are asked to make both cognitive and behavioral choices in a moral dilemma. They have used the procedure to explore primarily stage development and transition at the conventional level of moral reasoning. The purpose of the present study, however, is to demonstrate an experimental procedure

which lends itself to the controlled study of adult moral behavior. The procedure is a variation of Prisoner's Dilemma, a game widely used for the study of conflict resolution (Rapaport, 1965). The conflict generated by the game is both interpersonal and intrapersonal. Prisoner's Dilemma requires players to resolve the conflict many times, in each instance making a choice and translating it into behavior. The acts are of sufficiently short duration to permit many repetitions and yield a quantitative measure of players' choice tendency.

Prisoner's Dilemma is a non-zero sum game which presents a strategic dilemma: the strategy leading to the largest payoff for one player is the same strategy logically dictated to the other player. If both players adopt the same optimal strategy, they both loose. The basic strategy dilemma (interpersonal conflict) can be resolved by the introduction of a contract between the players. If both partners agree to cooperate on every trial, they both accumulate modest but equal payoffs. After such an agreement has been reached, however, if one player defects to obtain the optimal payoff, the other player is faced with a new dilemma (intrapersonal conflict). The choice now becomes one of; 1) keeping the contract or, 2) reconsidering strategies and considering the contract as nullified. Both keeping one's word and optimizing gains are highly valued behaviors in this society. A procedure which forces a person to choose between these two highly valued but mutually exclusive behaviors may be considered a moral dilemma.

The key issue in the dilemma is the agreement between the partners which may be viewed as a minor form of social contract: that agreement among people to regulate self-centered behavior in the interest of the common good and the assurance of justice.

The social contract is a result of principled moral reasoning. It depends upon a recognition of the relativity of social norms and points toward the concept of the categorical imperative as the basis for justice. Valuing the social contract as a method for insuring justice implies a personal responsibility to the contract independent of the behavior of others. For example, he who is

robbed does not claim the privelege of robbing in return, and he who violates the "protect life" contract by murdering, continues to have his life protected. Conventional moral reasoning does not recognize the value of the social contract and is dependent upon social norms for its definition of moral behavior.

Assuming participants would interpret the contractual form of Prisoner's Dilemma as a moral dilemma, and acknowledging the influence of situational factors, the following hypotheses were made:

1. Principled players would cooperate more than conventional players.
2. Players with a contract-keeping partner would cooperate more than players with a defecting partner.
3. Players with defecting partners would experience more anxiety (intrapersonal conflict) than players with contract-keeping partners.
4. Principled players would feel more commited to the contract than conventional players.

In the present situation, all female participants were used to avoid interactions with sex and,in order to control partner's behavior, a female confederate of the experimenter was employed.

Method

Subjects

The present sample was drawn from women enrolled in undergraduate, graduate and continuing education classes at the University of Toledo. The women had volunteered for a study concerning decision-making patterns and were paid two dollars each. Sixty women met the selection criteria for this study: There was consistency between how they rated and then ranked the issues of the Defining Issues Test (DIT). The number of inconsistencies on any story did not exceed eight; there were inconsistencies on no more than two stories and; no more than two stories had greater than nine issues rated the same (Rest, 1974). Participants were assigned to the Conventional group if their P-score on the DIT was 29 or less and if they chose Stage 3 and/or 4 reasoning predominantly. They were assigned to the Principled group if their P-score exceeded 29 and they indicated predominantly Stage 5 and/or 6 issues as being most salient. Participants ranged from 20 to 54 years in age. A 25 year old graduate student and a 31 year old homemaker served as confederates (C). They were each randomly assigned to work with half the participants.

Materials and Setting

The Defining Issues Test (DIT) designed by James Rest (1974) is an objective test of moral judgment. It requires the participant to read six moral dilemmas, decide what action the main character ought to take, rate the relative importance of twelve issues that could be pertinent and finally, rank order the four issues she considers to be of greatest importance in deciding on a course of action. Protocols are analyzed for the relative importance subjects assign to principled issues (P-score) and the frequency with which issues representing various stages are highly rated. Subjects are said to be reasoning at a particular stage if they preferred issues representing that stage one or more standard deviations above the average.

The State-Trait Anxiety Inventory (STAI) developed by Spielburger, Forsuch and Lushene (1970), requires the participant to indicate on a scale from one to five agreement with statements such as, "I am tense.", "I feel at ease." On the Trait-scale the participant is asked to indicate how she generally feels, while on the State-scale she indicates how she feels at that moment. The 20-item Trait Anxiety scale (STAI-T) was administered at the end of the experiment to reduce an anxiety "set" which would inflate the State measure. The short five item State scale (STAI-S) was used to minimize interruption of the procedure.

A questionnaire consisting of five items designed to ascertain the degree of commitment to the contract women felt before and after the experiment, along with the source of any conflict they experienced, was administered after the experiment.

The Prisoner's Dilemma Payoff Matrix was displayed in full view of participants throughout the experimental procedure. Participants' payoff possibilities were printed in red, the confederates' in blue, in each of four cells corresponding to their right or left hand moves. The confederate and the participant sat side-by-side at a conference table opposite the experimenter. They were separated by a panelboard which allowed them to see only the experimenter during the game. They had score pads on which to record their payoffs after each trial.

Procedure

The DIT was administered to groups of volunteers. Women whose DIT protocol met the selection criteria were contacted and agreed to meet with the experimenter and another "participant" for a follow-up session. Thirty principled and 30 conventional women were randomly assigned to one of three conditions, Cooperative, Partial Defect or Defect.

<u>Practice Trials:</u> Participants were told they were now in a practical, problem-solving situation which they could choose to resolve either individually or mutually with their partner. The Prisoner's Dilemma game was explained. Essentially: 'When the experimenter says "now," both partners raise one hand. If both raise their right hand, each earns one point or penny. If both raise left hands, each loses one point. When partners raise opposite hands, the left handed partner gains two points while the right handed loses two. The experimenter announces the payoffs after each trial so the participants know what their partners' behavior has been.'

Contract: The women then played 20 practice trials in order to become familiar with the game strategies. A break was called during which they could talk. At this point C asked if she could work out a strategy with the participant. Permission was granted and E left the room "so as not to influence the decision-making process." Once alone C proposed a strategy of continual mutual cooperation, i.e., raise right hand on each trial. After a clear verbal agreement was reached, one woman recalled E and the game resumed. The participants themselves frequently initiated both the discussion and the cooperative strategy. During the contracting procedure C was ignorant of which condition the participant had been assigned to.

Experiment: There was no further talking between partners. Women played four sets of 20 trials each. They completed the short form STAI-S after the first, second and third sets. Begining with the sixth trial, C played a prearranged game depending upon the condition to which the participant had been assigned: Cooperative; C raised her right hand on each trial thus keeping the contract. Partial Defect; C raised her right hand 50% of the trials according to a prearranged random pattern. Defect; C raised her left hand on every trial, thus breaking the contract and costing the participant two cents for every trial she cooperated. After 80 trials, C was revealed as a confederate and excused. The participants then completed the questionnaire and the STAI-T form. There followed a debriefing session.

Data

The data included contract-keeping behavior as indicated by the number of cooperative (right-hand) responses women made during the 75 experimental trials, Trait anxiety scores, State anxiety scores during the experiment, and responses to the questionnaire. Five questions were asked: "How much conflict did you feel about keeping the contract?," "How much was due to your partner's behavior?," "How much was due to a desire for a large payoff?," "How committed did you feel to the contract at the start?" In addition, the difference in commitment from start to end was examined.

Results

Contract-Keeping

Means and standard deviations of cooperative responses are presented in Table 1.

During the practice set, previous to the contract, there were no differences in cooperative responses between groups of women.

A repeated measures analysis of variance resulted in a significant main effect for both level of Moral Reasoning and Partner's Behavior on cooperative responses after the contract. Principled women kept the contract by responding cooperatively more often than conventional women regardless of how their partners behaved, $F(1,50) = 31.71$, $p < .001$. All women kept the contract more frequently when their partner was cooperative than when their partner defected, $F(2,50) = 137.87$, $p < .001$. A significant Moral Reasoning X Partner's Behavior interaction was found, $F(2,50) =$

19.2, $p < .001$. Principled women tended to maintain the contract regardless of condition while conventional women tended to be more influenced by their partner's behavior. As illustrated in Figure 1, the effect appears mainly due to the different responses of principled and conventional women when their partners defected totally. The more their partners defected, the more conventional women defected. There was also a significant Moral Reasoning X Trials interaction, $F(3,5)=2.82$, $p < .05$, illustrated in Figure 2. Ignoring their partners behavior, principled women maintained more cooperative responses over trials than conventional women. There was no significant Moral Reasoning X Partner's Behavior X Trials interaction.

Anxiety

Means and standard deviations of anxiety scores are presented in Table 2.

An analysis of variance revealed no significant differences in Trait anxiety between principled and conventional women.

A repeated measures analysis of variance on State anxiety resulted in a main effect for Partner's Behavior, $F(2,50)=23.57$, $p < .01$. Both principled and conventional women were more anxious when their partners defected than when they kept the contract and cooperated. There was no main effect for level of Moral Reasoning or for STAI-S administration. However, a significant Moral Reasoning X STAI-S Administration, $F(2,50)=3.80$, $p < .05$, indicated that over time, the pattern of anxiety scores was different for principled and conventional women. The shape of the curve illustrated in Figure 3 suggests that while conventional women were more anxious than principled women during the first set, by the second and third sets their scores were similar. The similarity seems due to a slight drop by conventional women and a slight rise by principled women. Examination of the means for individual conditions shows a rise and then fall of principled women's anxiety when their partner's defected but the triple interaction was not significant.

Commitment and Conflict

Means and standard deviations of questionnaire responses are presented in Table 3.

An analysis of variance demonstrated that principled and conventional women were similarly committed to the contract at the start of the experiment. However, a significant main effect for Moral Reasoning, $F(1,50)=4.97$, $p < .05$, indicated that, by the end of the experiment, conventional women felt less committed than principled women. Analysis of change in commitment from start to end of experiment resulted in a main effect for Moral Reasoning, $F(1,50)=12.79$, $p < .005$, such that, regardless of their partners behavior, principled women's commitment tended to remain constant while conventional women's commitment diminished in the course of the experiment. Differences in their Partner's Behavior influenced not only the commitment all women felt, $F(2,50)=5.29$ $p < .01$, but also how drastically that commitment changed by the end of the experiment, $F(2,50)=13.6$, $p < .001$. Post hoc analysis indicated that the effect was due to defecting partner's behavior. The more their partners defected, the more women's commitment was erroded.

Analysis revealed that Partner's Behavior also significantly effected the conflict women felt during the experimental procedure, $F(2,50)=11.57$, $p < .001$. Women whose partners defected were more dubious about keeping the contract than those whose partners cooperated. While their level of moral reasoning did not effect the amount of conflict women felt, it did effect the source of that conflict. Principled and conventional women equally attributed some conflict to their partner's behavior but conventional women attributed more of their conflict to a desire for the largest payoff, $F(1,50)=11.65$, $p < .005$.

The informal debriefing provided unexpected data which when analyzed demonstrated other behavioral differences between principled and conventional women. Principled women spontaneously cited the contract as the rationale for their behavior more often than conventional women, $x^2=9.27$, $p < .01$. When

conventional women who had not cited the contract were asked, "What about the agreement with your partner?," they responded, in effect, 'If one party breaks her word, the agreement no longer exists.' Significantly more principled than conventional women refused the two dollars offered for participation in the experiment, $x^2=9.29$, $p < .01$. These women said they had participated in order to help another woman (the experimenter) achieve her goal.

Discussion

The principle findings of the present study may be summarized as follows.

In a laboratory simulation of a moral dilemma where when two women agreed to cooperate and one partner subsequently ignored that agreement, principled women maintained the contract and cooperated regardless of their loses, whereas conventional women broke the contract and minimized their loses, thus supporting hypothesis 1.

Women's responses after an agreement to cooperate were effected by the behavior of their partners. All women adhered to the agreement when their partners did so. If their partners ignored the agreement, women cooperated less, thus breaking the contract. This behavior supports hypothesis 2.

Their own level of moral reasoning and the salient characteristic of the situation interacted to determine women's behavior.

Women's anxiety during the experiment was effected by their partner's behavior. Women whose partners broke the agreement reported higher anxiety than those whose partners honored it, thus supporting hypothesis 3. The more often the contract was broken, the more anxious women felt. The pattern of change in anxiety over time appears to be different for conventional and principled women.

All women felt equally committed to their cooperative agreement before the experimental trials began. By the end of the experiment, however, women whose partners broke the agreement felt considerably less commitment. Principled women were less effected and maintained a stronger commitment than that felt by conventional women.

Conflict about keeping the contract was experienced by all women. Both conventional and principled women related that conflict to their partner's behavior but conflict revolving about the desire for a large payoff was of greatest concern to conventional women.

The main effects for level of Moral Reasoning support the assumption that the experimental situation was perceived as a moral dilemma. Principled and conventional women behaved similarly on the practice trials and in the cooperative condition. Differences in behavior emerged only after the contract had been broken. In addition, principled women report the contract as reason for their behavior.

It is suggested that for conventional women, the situation was primarily one of achievement and that the prime conflict was interpersonal. The contract was a way of resolving the interpersonal conflict and serving achievement goals simultaneously. When the contract was broken and no longer promoted gain, it became valueless. Conventional women's anxiety was high at that point, but the main source of their conflict was a strategic one, a desire for the largest payoff. The non-moral situational cues all indicated that defecting was the most strategic: it minimized loses.

To the principled woman, the contract represented not a means to achieve gain but a commitment to cooperative behavior. The conflict over whether to keep the contract was primarily intrapersonal and involved questions of personal responsibility and value. Principled women frequently asked that a sixth question, "How much conflict stemmed from a desire to keep your word?", be added to the questionnaire.

A comparison of the patterns of anxiety and cooperative responses in the defect condition prompts some intriguing but very tentative speculations. An examination of the means indicates that after the first set of trials, conventional women's decreased anxiety paralleled a sharp decrease in their cooperative responses. It appears that with the resolution of the dilemma anxiety decreased. On the other hand, principled women's anxiety increased after the first set while their cooperative responses decreased. After the second set their anxiety began to decrease and in the

third set, their cooperative responses increased. It is possible that principled women did not resolve the dilemma until this point. Although they too defected, their questionnaire responses indicated a high commitment to the contract. This discrepancy between value and behavior may be the source of heightened anxiety. The point when cooperative responses increased and anxiety decreased may represent a realignment of behavior and values; a moral resolution to the dilemma. Additional trials and anxiety measurements would be needed to adequately explore this suggestion. presented a dilemma of minimal consequence and short duration, it was sufficient to arouse anxiety and to discriminate behaviorally between women of different moral reasoning capacities. The consistency with which principled women maintained both their attitudinal and behavioral commitment to the contact supports Turiel's (1972) suggestion that the structural organization of the higher stages should allow greater congruence of reasoning and behavior. The contractual form of Prisoner's Dilemma presents an experimental situation which may prove helpful in the exploration of how non-moral considerations affect moral decision making. In addition, it is suggested that anxiety as a dependent variable is revealing of patterns of decision making.

Table 1

Means and Standard Deviations of Cooperative Responses

Group		Practice Trials	Total Post-Contract Trials	Trials Post-Contract 1-20	21-40	41-60	61-80
Cooperative							
Principled	$\bar{X}$	12.00	80.00	20.00	20.00	20.00	20.00
	SD	3.91	0.00	0.00	0.00	0.00	0.00
Conventional	$\bar{X}$	10.10	79.89	19.89	20.00	20.00	20.00
	SD	4.65	0.31	0.31	0.00	0.00	0.00
Partial Defect							
Principled	$\bar{X}$	10.00	64.70	18.00	16.60	14.20	15.90
	SD	5.67	17.25	3.49	4.78	6.01	5.36
Conventional	$\bar{X}$	10.20	59.40	16.70	15.70	13.2	13.80
	SD	1.98	15.45	3.36	3.91	4.89	5.63
Defect							
Principled	$\bar{X}$	10.70	52.89	14.50	12.70	12.30	13.40
	SD	2.49	22.37	3.20	6.65	7.63	8.89
Conventional	$\bar{X}$	8.50	23.50	12.60	4.60	3.20	3.10
	SD	2.55	18.39	4.22	5.58	4.44	6.02

Table 2

Means and Standard Deviations of Anxiety Scores

Group		Trait Anxiety	State Anxiety Post-Contract			
			Trial 20	Trial 40	Trial 60	Pooled
Cooperative						
Principled	$\bar{X}$	36.50	6.50	6.70	6.10	19.30
	SD	3.719	3.567	3.057	1.853	7.190
Conventional	$\bar{X}$	37.00	7.00	6.50	6.50	20.00
	SD	7.630	2.582	2.593	2.321	7.102
Partial Defect						
Principled	$\bar{X}$	38.20	8.00	8.00	7.70	23.70
	SD	10.737	2.708	2.789	2.452	7.181
Conventional	$\bar{X}$	35.60	10.50	9.60	8.80	28.90
	SD	6.24	3.567	3.836	3.393	9.905
Defect						
Principled	$\bar{X}$	36.40	9.70	10.90	9.80	30.40
	SD	5.929	3.917	5.021	4.517	13.032
Conventional	$\bar{X}$	35.70	11.60	10.10	10.10	31.80
	SD	7.804	2.875	3.604	4.606	10.064

Table 3

Means and Standard Deviations of Questionnaire Responses

Group		How Committed at Start of Experiment?	How Committed at End of Experiment?	Difference in Commitment Start to End	How Much Conflict During Experiment?	Conflict Due to Partner's Behavior?	Conflict Due to Desire for Biggest Payoff?
Cooperative							
Principled	$\bar{X}$	4.90	4.80	0.10	2.00	1.40	1.00
	SD	.31	.42	.31	1.49	.84	0.00
Conventional	$\bar{X}$	4.30	4.60	0.50	2.20	2.40	1.50
	SD	.67	.51	.70	1.54	1.64	.70
Partial Defect							
Principled	$\bar{X}$	4.60	3.80	1.00	2.50	2.00	1.00
	SD	.69	1.39	1.41	1.43	1.7	0.00
Conventional	$\bar{X}$	4.70	2.60	2.10	2.60	3.80	2.00
	SD	.67	1.50	1.37	1.17	1.68	1.41
Defect							
Principled	$\bar{X}$	5.00	3.80	1.20	2.70	3.30	1.60
	SD	0.00	1.47	1.47	1.49	1.82	.84
Conventional	$\bar{X}$	4.30	1.90	2.40	3.30	2.70	2.00
	SD	.82	1.28	1.57	1.41	1.70	.94

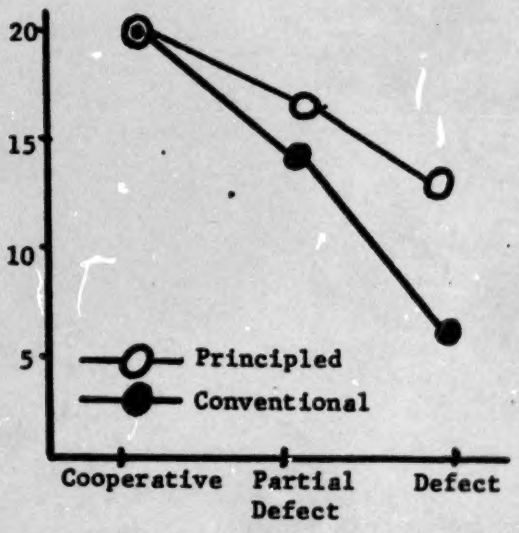

Figure 1. Moral reasoning X partner's behavior interaction

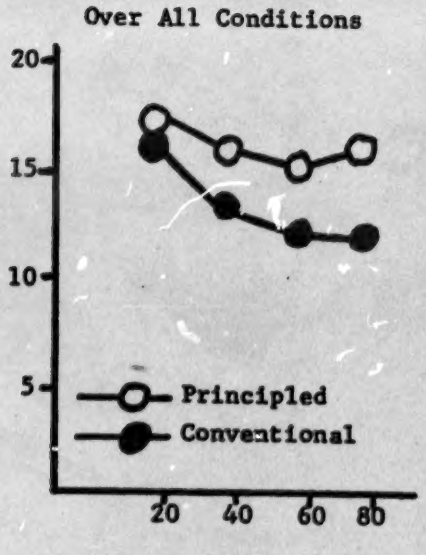

Figure 2. Moral reasoning X trials interaction

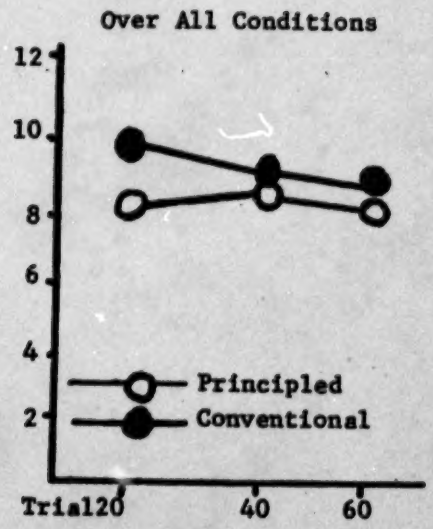

Figure 3. Moral reasoning X trials interaction

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